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Cataloguing, Labeling, and Storing Microscopical Preparations.

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To everyone possessing a microscopic slide one or more of the considerations named in the title of this paper appears of importance. All of them are, however, of special importance to the teacher and investigator. To the investigator, his specimens are the most precious of his possessions, for they contain the facts which he tries to interpret, and they remain the same while his knowledge, and hence his power of interpretation, increase. They thus form the basis of further or more correct knowledge; but in order to be safe-guides for the student, teacher, or investigator, it seems to the writer that every preparation should possess two things; viz., a label, and a catalogue or history. This catalogue should indicate all that is known of a specimen at the time of its preparation, and all of the processes by which it is treated. It is only by the possession of such a complete knowledge of the entire history of a preparation that one is able to judge with certainty of the comparative excellence of methods, and thus to discard or improve those which are defective. The teacher, as well as the investigator, should have this information in an accessible form, so that not only he but his students can obtain at any time all necessary information concerning the preparations which serve him as illustrations and them as examples.

After consulting all the authorities at my disposal, and after profiting by the suggestions of as many investigators and teachers as possible, and after a careful practical test of five years in the anatomical laboratory of Cornell university, the following formula

for cataloguing and labeling microscopical preparations is offered, hoping that others may find aid in the suggestions, and in return help the author to eliminate what is needless, and correct what is defective:

Formula for cataloguing Microscopical Preparations⁽²⁾:—

1. The general name.
2. The number and date of the preparation and the name of preparator.
3. The special name of the preparation; the common and scientific name of the object from which it is derived.
4. The special object of the preparation.
5. The method of hardening, dissociating, etc.
6. The special method of preparation for the microscope; viz., cut into sections, spread, etc.
7. The staining agent and the time required for staining.
8. The clearing agent, the mounting medium and the cement used for sealing.
9. The objectives to use in studying the preparation.
10. Remarks, including references to good figures and descriptions.

Formula for Labeling Microscopical Preparations⁽³⁾:—

1. The number and date of the preparation (No. 2 of catalogue).
2. The general name (No. 1 of catalogue).
3. The name of the object from which the preparation is derived.

An Actual Catalogue Card Written According to the Formula⁽¹⁾:—

1. Nerve fibres.
2. No. 31 (Dr'r. II), March 21, 1880; S. H. G. preparator.
3. Isolated, medullated nerve fibres from the sciatic of the cat (*Felis domestica*).
4. This preparation shows well the axis cylinder and the nodes of Ranvier.
5. Dissociated 24 hours in 25 per cent. alcohol.
6. Teased or dissociated on the slide with needles.
7. Stained over night (12 hours) in picrocarmine.
8. Cleared with turpentine and carbolio acid; mounted in chloroform balsam; sealed with shellac.
9. Use three-fourths and higher objectives.
10. See for figures and descriptions (Quain's Anatomy, Vol. II., p. 141, and Ranvier, *Traité d'Histologie*, p. 723).

1. No. 96; 1880.

2. Nerve fibers.

3. Cat.
(See fig. 1, A).

A practical question arises immediately: viz., whether this catalogue shall be kept in a manuscript book or in some other form. The card form of catalogue, like that employed by Prof. Wilder for anatomical and zoological specimens, has been adopted and used during the last five years⁽⁴⁾. It has proved very satisfactory and convenient. The cards are postal card size, and each preparation has its own card. Such a catalogue has the advantage that it may be arranged alphabetically. As new preparations are made, new cards may be added in their proper alphabetical order, while the cards of destroyed or discarded preparations may be removed without, in any way, marring the catalogue. Finally, the cards may be kept in a neat box which occupies but little more space than a manuscript book, and may be as readily carried from place to place. The ease and certainty with which the history of any preparation may be found is so evident that it hardly needs to be mentioned.

Cabinet.—A microscopical cabinet should possess the following characters:

1. It should allow the slides to lie flat, and exclude the dust and light.

2. Each slide should be in a separate compartment. At each end of this compartment should be a groove or bevel, so that upon depressing either end of the slide the other rises sufficiently to be easily grasped (Fig. 1, B). It is also desirable to have the floor of the compartment under the object grooved, so that the slide opposite the preparation will not rest on the wood, and thus become soiled.

2. Each compartment should be numbered⁽⁶⁾, and into each should be put only the slide bearing the corresponding number (Fig. 1, A).

4. The drawers of the cabinet (Fig. 2,) should be independent, but so close together that the slides cannot get out when the cabinet is tipped. On the outside or front of each drawer should be the number of the drawer in Roman numerals, and the number of the first and last compartment in the drawer in Arabic numerals⁽⁶⁾.

In conclusion, it seems to the writer, both from theory and from practice, that a collection of microscopical objects, catalogued,

labeled, and stored as described above, would be at its maximum value, from the ease and certainty of finding objects, while the fullness of the information concerning them would make them guides as well as models for students and a storehouse of knowledge for the teacher and investigator.

NOTE 1.—The number of the drawer of the cabinet should also be here given if the slides are kept in a cabinet as described below.

NOTE 2.—If the information required under any of the headings in this formula is inapplicable, those headings may be suppressed or left blank.

NOTE 3.—INK AND PASTE.—While it might not be worth while to trouble one's self as to the kind of ink to employ in writing labels and catalogue cards for ordinary preparations, yet precious specimens and those upon which are based the statements in original investigations should have their labels and catalogues written with an imperishable ink like India ink. A good India ink for labels and catalogues may be prepared by adding one gram of dry India ink to 5 cc. of water and allowing it to stand until a pasty mass is formed. Then 8 cc. of Acetic Acid No. 8 are added.

India ink prepared in this way or in a solution of caustic potash or soda penetrates the paper, as shown by Dr. Lester Curtis (*Amer. Monthly Mic. Jour.*, vol. 7, p. 128) and cannot be removed except by destroying the paper. Higgins Waterproof India ink has been found very satisfactory by the writer.

India ink was used for labels of all kinds by the late Prof. Chas. F. Hartt, and is recommended by Dr. Semper (*Amer. Naturalist*, vol. xii, p. 414) and by J. S. Kingsley in the *Naturalists' Assistant*, p. 46.

A paste for sticking the labels to the slide so that they shall not peel off is a desideratum. The best substance used by me so far is liquid gelatin prepared with slight modification, according to the directions given in *Wilder and Gage's Anatomical Technology*, p. 535. "75 grams of the best translucent glue are put into a clean towel and crushed with a hammer. The glue is then put into a bottle and 100 cc. of commercial acetic acid poured over it. After three days or more there are added 100 cc. of 95 per cent. alcohol and 100 cc. of water, and 15 to 30 cc. of glycerin." Thus prepared, the gelatin may be used like ordinary mucilage. The brush, however, should be mounted in a quill or wooden handle as a metal mounting is quickly corroded.

NOTE 4.—The card catalogue for anatomical preparations was first used by Prof. Wilder in 1874, although he had proposed slips for notes in 1867. For a full discussion of the subject, see *Proceedings of the Boston Society of Natural History*. May 15, 1867, p. 242. And *Anatomical Technology*, Wilder and Gage, pp. 45-52,

NOTE 5.—The drawers and compartments may be very neatly and easily numbered by the use of a rubber stamp.

NOTE 6.—An excellent cabinet possessing the above characters, may be cheaply made by putting shallow drawers in a microscope box (Fig. 2). Or as suggested by Prof. T. B. Stowell, a thread box may be modified into an excellent cabinet by adding doors and shallow drawers.

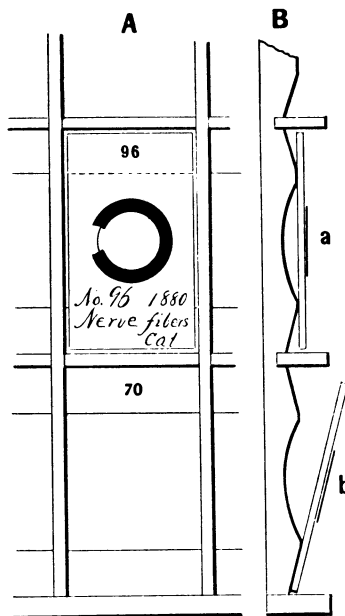


Fig. 1.

FIG. 1, A.—Part of a cabinet drawer seen from above. In compartment No. 96 is represented a slide lying flat. The label of the slide and the number of the compartment are so placed that the number of the compartment may be seen through the slide (the slides are 25 x 45 mm.).

FIG. 1, B.—This represents a section of the same part of the drawer. (a) Slide resting as in A No. 96. The preparation is seen to be above a groove in the floor of the compartment. (b) One end of the slide is seen to be uplifted by depressing the other into the bevel.

FIG. 2.—A microscope box modified into a cabinet. The method of numbering the outside of the drawers is also shown. The strips

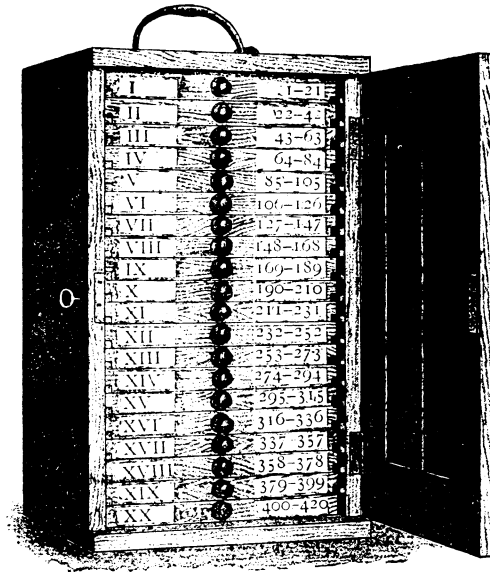


Fig. 2.

on which the drawers slide may be hidden by having them shorter than here shown, and by having the front of the drawer complete instead of notched.